

T13D02 – 13.1-13.2 IB Practice

Name.....

1. Two characteristics of the d-block (transition) elements are that they exhibit variable oxidation states and form colored compounds.

(i) State **two** possible oxidation states for iron and explain these in terms of electron arrangements.

(2)

(ii) Explain why many compounds of d-block (transition) elements are colored.

(3)

(Total 5 marks)

2. Magnesium chloride and silicon(IV) chloride have very different properties.

(i) Give the formula and physical state at room temperature of each chloride.

(2)

(ii) State the conditions under which, if at all, each chloride conducts electricity.

(2)

(iii) Each chloride is added to water in separate experiments. Suggest an approximate pH value for the solution formed, and write an equation for any reaction that occurs.

(3)

(Total 7 marks)

3. (i) Explain why complexes of Zn^{2+} are colorless whereas complexes containing Cu^{2+} are colored.

(3)

(ii) Give the formula and describe the shape of the complex ion formed between Fe^{3+} and the ligand CN^- .

(2)

(Total 5 marks)